IN THE CLAIMS:

Please amend claims 1, 2, 16, 17, 31, 32, 46, 50 and 51 as follows.

1. (Currently Amended) A method, comprising:

determining a performance measure representing communication performance ~~of~~ in a communication channel between a first transceiver and a second transceiver in a telecommunication system by using an extended channel model which depends on a non-orthogonal modulation matrix, wherein ~~the communication channel comprising~~ non-orthogonal modulation by the non-orthogonal modulation matrix is comprised in the extended channel model, wherein modulation symbols in the non-orthogonal modulation matrix are distributed using at least two radiation patterns, the performance measure being sensitive to a change in spatial modulation through the extended channel model, the spatial modulation being used by the non-orthogonal modulation matrix; and

controlling the communication resources based on the performance measure.

2. (Currently Amended) The method of claim 1, further comprising:

determining a plurality of performance measures for at least two different non-orthogonal modulation matrices before controlling the communication resources~~a plurality of communication channels between the first transceiver and the second transceiver~~; and

~~controlling the communication resources based on the performance measures.~~

selecting communication resources associated with a non-orthogonal modulation matrix yielding a better performance measure.

3. (Previously Presented) The method of claim 1, further comprising:

determining a second performance measure for a second communication channel between the first transceiver and a third transceiver; and

controlling the communication resources based on the determined performance measures.

4. (Previously Presented) The method of claim 1, further comprising:

determining the performance measure by using a channel model which represents the communication channel between the first transceiver and the second transceiver.

5. (Cancelled)

6. (Previously Presented) The method of claim 1, wherein the modulation matrix comprises at least one symbol which is transmitted using at least two antenna resources within at least two symbol time intervals.

7. (Previously Presented) The method of claim 1, wherein the modulation matrix comprises at least one element of one row for forming a vector modulation, a

plurality of rows for forming matrix modulation, a symbol rate greater than one, a row having a dimension greater than that of a channel matrix, a column having a dimension greater than that of the channel matrix, effect of spreading, effect of carrier, effect of waveform, and effect of channelization codes.

8. (Previously Presented) The method of claim 1, further comprising:

determining the performance measure using at least one channel information on a radio channel associated with the communication channel, antenna weights associated with the communication channel, and modulation information on the communication channel.

9. (Previously Presented) The method of claim 1, wherein the performance measure comprises at least one element selected from frame-error rate, bit-error rate, signal-to-noise ratio, signal-to-interference ratio, asymptotic efficiency, throughput, interference power, and noise power.

10. (Previously Presented) The method of claim 1, further comprising:

selecting a transmission method based on the performance measure.

11. (Original) The method of claim 1, wherein controlling the communication resources is based on comparison between a target value and the performance measure.

12. (Previously Presented) The method of claim 1, further comprising:

configuring the communication resources to instantaneous requirements based on the performance measure.

13. (Previously Presented) The method of claim 1, wherein the communication channel further comprises at least one of interleaving, spreading, carrier waveform, sub-carrier waveform, channel encoding, matrix modulation, vector modulation, multiple-input multiple output modulation, space-time coding, space-frequency coding, space-code coding, beam forming, multi-beam forming, radio channel, channel decoding, detection, equalizing, rake reception, and filtering of a received signal.

14. (Previously Presented) The method of claim 1, wherein the communication resources comprise a transmit communication resource comprising at least one of a temporal transmit communication resource, a spectral transmit communication resource, an encoding resource, a spatial transmit communication resource, and transmit power.

15. (Previously Presented) The method of claim 1, wherein the communication resources comprise receive communication resources.

16. (Currently Amended) An apparatus, comprising:

a determiner configured to determine a performance measure representing communication performance ~~of~~ in a communication channel between a first transceiver and a second transceiver in a telecommunications system by using an extended channel model which depends on a non-orthogonal modulation matrix, wherein ~~the communication channel comprising~~ non-orthogonal modulation by the non-orthogonal modulation matrix is composed in the extended channel model, wherein modulation symbols in the non-orthogonal modulation matrix are distributed using at least two radiation patterns, the performance measure being sensitive to a change in spatial~~the~~ modulation through the extended channel model, the spatial modulation being used by the non-orthogonal modulation matrix; and

a controller configured to control the communication resources based on the performance measure.

17. (Currently Amended) The apparatus of claim 16, further comprising:

a determiner configured to determine a plurality of performance measures for at least two different non-orthogonal modulation matrices before controlling the communication resources, and ~~a plurality of communication channels between the first transceiver and the second transceiver~~ wherein the controller is configured to select communication resources associated with a non-orthogonal modulation matrix yielding a better performance measure.

18. (Previously Presented) The apparatus of claim 16, further: comprising:

a determiner configured to determine a second performance measure for a second communication channel between the first transceiver and a third transceiver.

19. (Previously Presented) The apparatus of claim 16, further comprising:

a determiner configured to determine the performance measure by using a channel model which represents the communication channel between the first transceiver and the second transceiver.

20. (Cancelled)

21. (Previously Presented) The apparatus of claim 16, wherein the modulation matrix comprises at least one symbol which is transmitted using at least two antenna resources within at least two symbol time intervals.

22. (Previously Presented) The apparatus of claim 16, wherein the modulation matrix comprises at least one of one row for forming vector modulation, a plurality of rows for forming matrix modulation, a symbol rate greater than one, a row having a dimension greater than that of a channel matrix, a column with a dimension greater than that of a channel matrix, effect of spreading, effect of carrier, effect of waveform, and effect of channelization codes.

23. (Previously Presented) The apparatus of claim 16, wherein the determiner is configured to use at least one of channel information on a radio channel associated with the communication channel, antenna weights associated with the communication channel, and modulation information on the communication channel.

24. (Previously Presented) The apparatus of claim 16, wherein determiner is configured to represent at least one of a frame-error rate of the communication channel, bit-error rate, signal-to-noise ratio, signal-to-interference ratio, asymptotic efficiency, throughput, interference power, and noise power.

25. (Previously Presented) The apparatus of claim 16, further comprising:

a selector configured to select a transmission method based on the performance measure.

26. (Previously Presented) The apparatus of claim 16, wherein the controller is configured to control communication resources based on comparison of a target value and the performance measure.

27. (Previously Presented) The apparatus of claim 16, further comprising:

an adapter configured to adapt the communication resources to instantaneous requirements based on the performance measure.

28. (Previously Presented) The apparatus of claim 16, wherein the communication channel further comprises at least one of interleaving, spreading, carrier waveform, sub-carrier waveform, channel encoding, matrix modulation, vector modulation, multiple-input multiple output modulation, space-time coding, space-frequency coding, space-code coding, beam forming, multi-beam forming, radio channel, channel decoding, detection, equalizing, rake reception, and filtering of received signal.

29. (Previously Presented) The apparatus of claim 16, wherein the communication resources include a transmit communication resource of at least one of a temporal transmit communication resource, a spectral transmit communication resource, an encoding resource, a spatial transmit communication resource, and transmit power.

30. (Previously Presented) The apparatus of claim 16, wherein the communication resources include receive communication resources.

31. (Currently Amended) An apparatus, comprising:

a performance measure estimator configured to determine a performance measure that represents communication performance ~~of~~ in a communication channel between a first transceiver and a second transceiver by using an extended channel model which depends on a non-orthogonal modulation matrix,

wherein the ~~communication channel comprising~~ non-orthogonal modulation by the non-orthogonal modulation matrix is comprised in the extended channel model,

wherein modulation symbols in the non-orthogonal modulation matrix are distributed using at least two radiation patterns, and wherein the performance measure is sensitive to ~~the~~ a change in spatial modulation through the extended channel model, the spatial modulation being used by the non-orthogonal modulation matrix; and

a controller connected to the performance measure estimator, the controller being configured to control the communication resources based on the performance measure.

32. (Currently Amended) The apparatus of claim 31, wherein the performance measure estimator is configured to determine a plurality of performance measures for at least two different non-orthogonal modulation matrices before controlling the communication resources ~~a plurality of communication channels between the first transceiver and the second transceiver;~~, and wherein the controller is configured to select communication resources associated with a non-orthogonal modulation matrix yielding a better performance measure~~control the communication resources based the performance measures~~.

33. (Previously Presented) The apparatus of claim 31, wherein the performance measure estimator is configured to determine a second performance measure

for a second communication channel between the first transceiver and a third transceiver; and

wherein the controller is configured to control the communication resources based on the determined performance measures.

34. (Previously Presented) The apparatus of claim 31, wherein the performance measure estimator is configured to determine the performance measure by using a channel model which represents the communication channel.

35. (Cancelled)

36. (Previously Presented) The apparatus of claim 31, wherein the modulation matrix comprises at least one symbol which is transmitted using at least two antenna resources within at least two symbol time intervals.

37. (Previously Presented) The apparatus of claim 31, wherein the modulation matrix comprises at least one of one row for forming a vector modulation, a plurality of rows for forming a matrix modulation, a symbol rate greater than one, a row having a dimension greater than that of a channel matrix, a column having a dimension greater than that of the channel matrix, effect of spreading, effect of carrier, effect of waveform, and effect of channelization codes.

38. (Previously Presented) The apparatus of claim 31, wherein the performance measure estimator is configured to determine the performance measure using at least one of channel information on a radio channel associated with the communication channel, antenna weights associated with the communication channel, and modulation information on the communication channel.

39. (Previously Presented) The apparatus of claim 31, wherein the performance measure is configured to represent at least one of frame-error rate of the communication channel, bit-error rate, signal-to-noise ratio, and signal-to-interference ratio.

40. (Previously Presented) The apparatus of claim 31, wherein the controller is configured to select a transmission method based on the performance measure.

41. (Previously Presented) The apparatus of claim 31, wherein the controller is configured to control communication resources based on comparison between a target value and the performance measure.

42. (Previously Presented) The apparatus of claim 31, wherein the controller is configured to adapt the communication resources to instantaneous requirements based on the performance measure.

43. (Previously Presented) The apparatus of claim 31, wherein the communication channel further comprises at least one of interleaving, spreading, carrier waveform, sub-carrier waveform, channel encoding, matrix modulation, vector modulation, multiple-input multiple output modulation, space-time coding, space-frequency coding, space-code coding, beam forming, multi-beam forming, radio channel, channel decoding, detection, equalizing, rake reception, and filtering of a received signal.

44. (Previously Presented) The apparatus of claim 31, wherein the communication resources comprise a transmit communication resource of at least one of a temporal transmit communication resource, a spectral transmit communication resource, an encoding resource, a spatial transmit communication resource, and transmit power.

45. (Previously Presented) The apparatus of claim 31, wherein the communication resources include receive communication resources.

46. (Currently Amended) An apparatus, comprising:

means for determining a performance measure representing communication performance ~~of~~ in a communication channel between a first transceiver and a second transceiver by using an extended channel model which depends on a non-orthogonal modulation matrix, wherein ~~the communication channel comprising~~ non-orthogonal modulation by the non-orthogonal modulation matrix is comprised in the extended channel model, wherein modulation symbols in the non-orthogonal modulation matrix are distributed using at least two radiation patterns, the performance measure being sensitive to a change in spatial ~~the~~ modulation through the extended channel model, the spatial modulation being used by the non-orthogonal modulation matrix; and

means for controlling the communication resources based on the performance measure.

47. (Previously Presented) The method of claim 1, further comprising determining the performance measure by using a receive filter matrix which depends on a non-orthogonal matrix via the extended channel model.

48. (Previously Presented) The apparatus of claim 16, wherein the determiner is configured to determine the performance measure by using a receive filter matrix which depends on a non-orthogonal matrix via the extended channel model.

49. (Previously Presented) The apparatus of claim 31, wherein the performance measure estimator is configured to determine the performance measure by using a receive filter matrix which depends on a non-orthogonal matrix via the extended channel model.

50. (Currently Amended) An apparatus, comprising:

a performance measure estimator configured to determine a performance measure that represents communication performance ~~of~~ in a communication channel between a base station and a mobile station by using an extended channel model which depends on a non-orthogonal modulation matrix, wherein ~~the communication channel comprising~~ non-orthogonal modulation by the non-orthogonal modulation matrix is comprised in the extended channel model, wherein modulation symbols in the non-orthogonal modulation matrix are distributed using at least two radiation patterns, and wherein the performance measure is sensitive to a change in spatial ~~the~~ modulation through the extended channel model, the spatial modulation being used by the non-orthogonal modulation matrix; and

a radio frequency part configured to transmit the determined performance measure to the base station for controlling communication resources.

51. (Currently Amended) An apparatus, comprising:

a controller configured to

receive a performance measure that represents communication performance ~~of~~ in a communication channel between a first transceiver and a second transceiver by using an

extended channel model which depends on a non-orthogonal modulation matrix, wherein ~~the communication channel comprising~~ non-orthogonal modulation by the non-orthogonal modulation matrix is comprised in the extended channel model, wherein modulation symbols in the non-orthogonal modulation matrix are distributed using at least two radiation patterns, and wherein the performance measure is sensitive to a change in spatial ~~the~~ modulation through the extended channel model, the spatial modulation being used by the non-orthogonal modulation matrix, and

control communication resources based on the received performance measure.